

# CLAIMS

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1- An acrylic composition for use as a capstock for structural plastics in composites formed by feedblock coextrusion, the acrylic composition comprised of a blend of an acrylic ester polymer and acrylic polymeric additive.

2- A composite product comprised of a layer of structural plastic having a thin protective layer of a blend of an acrylic ester polymer and acrylic polymeric additive.

3- A process for producing a composite of a structural plastic and a thin protective layer, the process comprises joining a molten stream of structural plastic and a molten stream of a blend of an acrylic ester polymer and an acrylic polymeric additive in an extruder discharge conduit to form a single stratified stream of molten material conforming to the cross-section of the conduit and having a relatively sharply defined interface between the structural plastic and the blend, and thereafter passing the stratified stream through a sheet-form extrusion die having its die lips generally aligned with the foregoing interface.

4- An acrylic resin capstock composition comprised of:

- a) 10 - 95% polymethyl methacrylate or an  $C_1-C_6$  alkyl methacrylate/ $C_1-C_6$  alkyl acrylate copolymer based matrix
- b) 0 - 60% modifiers; and
- c) 5 - 40 % acrylic polymer additive which is comprised of
  - 5 - 90 % methyl methacrylate,
  - 10 - 95%  $C_2-C_6$  alkyl methacrylate and
  - 0 - 15% methacrylic acid, acrylic acids or  $C_1$ -esters thereof.

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5- The capstock composition of Claim 4 wherein the acrylic polymer additive is comprised of 20-80% methyl methacrylate and 20-80% butyl methacrylate and has a molecular weight from 25,000-300,000.

6- The capstock composition of Claim 5 wherein the acrylic polymer additive is comprised of 50-80% methyl methacrylate and 20-50% butyl methacrylate and has a molecular weight from 25,000-100,000.

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7- A co-extruded product comprised of two layers  
(a) a first layer comprised of structural plastic and  
(b) a second layer comprised of  
(i) methyl methacrylate resin, and  
(ii) an acrylic polymer additive that increases the adhesive strength between the layers.

8- The product of Claim 7 wherein the structural plastic is polystyrene.

9- The product of Claim 8 wherein the polystyrene is high impact polystyrene or crystalline polystyrene.

10- The product of claim 7 wherein the acrylic polymer additive is a polymer comprised of:  
(a) 5-90 wt% methyl methacrylate,  
(b) 10-95 wt% C<sub>2</sub>-C<sub>6</sub> alkyl methacrylate, and  
(c) 0-15 wt% methacrylic acid, acrylic acid or C<sub>1</sub>-C<sub>5</sub> esters thereof.

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11- The product of claim 10 wherein the acrylic polymer additive is a polymer having monomer units of methyl methacrylate, butyl methacrylate and optionally methacrylic acid.

12- The product of claim 11 wherein ratio of the monomer units is

- (a) 20 to 80 wt% methyl methacrylate,
- (b) 20 to 80 wt% butyl methacrylate and
- (c) 0 to 10 wt% methacrylic acid.

13- The product of claim 12 wherein ratio of the monomer units is

- (a) 50 to 80 wt% methyl methacrylate,
- (b) 20 to 50 wt% butyl methacrylate and
- (c) 0 to 10 wt% methacrylic acid.

14- The product of Claim 7 wherein the second layer is comprised of

- (i) 60 to 95 wt % of methylmethacrylate resin and
- (ii) 5 to 40 wt % of the acrylic polymer additive.

15- The product of Claim 7 wherein the first layer contains pigments, dyes, fillers, PS, acrylic and HIPS rework, different grades of HIPS.

16- A co-extruded product comprised of two layers

- (a) 50 to 95 wt % being a first layer comprised of high impact polystyrene, and
- (b) 5 to 50 wt % being a second layer being comprised of
  - (i) 60 to 95 wt % of an acrylate resin, and
  - (ii) 5 to 40 wt % of an acrylic polymer additive which is copolymer or terpolymer that increases the adhesive strength between the layers.

17- The product of Claim 16 wherein the acrylic polymer additive is a 50-80% methyl methacrylate and 20-50% butyl methacrylate polymer having a molecular weight from 25,000-300,000.

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18- The product of Claim 16 wherein the acrylic polymer additive is a 20-50% methyl methacrylate and 50-80% butyl methacrylate having a molecular weight from 25,000-300,000 .

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19- The product of claim 1 used in sanitary applications, appliance housings, appliance liners, appliance doors, building doors, window trim, shutters, automotive parts or farm equipment.

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